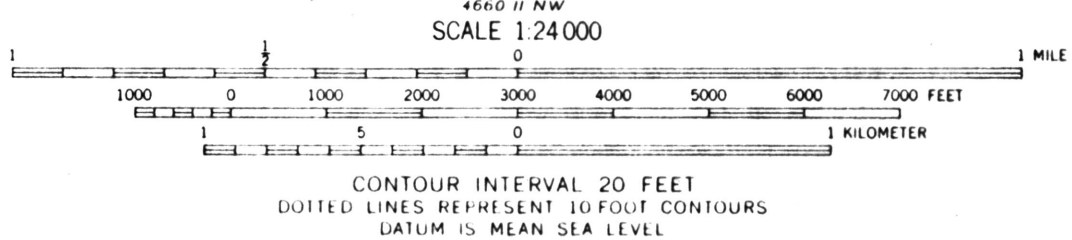
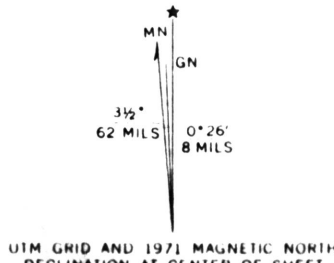


Maped, edited, and published by the Geological Survey  
Control by USGS, USC&GS, and USCE  
Topography from aerial photographs by photogrammetric methods  
Aerial photographs taken 1958 Field check 1958  
Polyconic projection 1927 North American datum  
10,000-foot grid based on West Virginia coordinate system,  
south zone  
1000-meter Universal Transverse Mercator grid ticks,  
zone 17, shown in blue



ROAD CLASSIFICATION  
Heavy duty ——— Light duty ———  
Medium duty ——— Unimproved dirt ———  
Inter-Lane Roads { } U.S. Route O State Route

CHARLESTON WEST, W. VA.  
N3815-W8137 5/7 5

Landslides, rockfall and slide-prone areas modified from Lessing, P., Kulander, B. R., Wilson, B. D., Dean, S. L., and Woodring, S. M., 1976, West Virginia landslides and slide-prone areas: West Virginia Geological and Economic Survey, Environmental Geology Bulletin 15. Other features interpreted from aerial photographs:  
1:60,000 SCALE BLACK AND WHITE 1960  
1:125,000 SCALE COLOR INFRARED 1975  
1:60,000 SCALE BLACK AND WHITE 1977

Photointerpretation and field check 1976.  
This map has not been edited or reviewed for conformity with Geological Survey standards and nomenclature.

## LANDSLIDES AND RELATED FEATURES

OF THE CHARLESTON WEST, W.VA. QUADRANGLE

by

GREGORY C. OHLMACHER

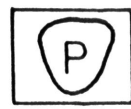
U.S. Geological Survey

OPEN FILE MAP 83-80 (C-3)



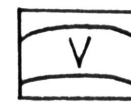
### ACTIVE OR RECENTLY ACTIVE LANDSLIDE

Complex landslide composed of earthflow, debris slide, earth and rock slump. Identified from historical records, and from scars, debris and other field evidence. Ground extremely unstable; sliding accelerated by excavation, loading and changes in drainage conditions. May include areas with several active slides too small to be shown separately.



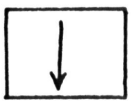
### OLD LANDSLIDE

Area of extensive hummocky ground caused by earthflow and earth and rock slump. Lacks clear evidence of active sliding. Relatively stable in natural, undisturbed state, generally not affected by small structures properly sited in areas away from the edge of the toe, can be reactivated by extensive, rapid excavation, loading, and changes in ground water and surface water conditions. Area of old landslide probably includes recent ones not identified from field evidence or otherwise documented. Upslope boundary of landslide generally defined by modified scarp, but downslope (toe) may be gradational and not well defined.



### COLLUVIAL SLOPE

Valley wall along major streams with slope as steep as 40° (85%); stony, clayey silt soil up to 50 ft. (15 m) thick; commonly buttressed by a terrace or bench at the toe of the slope; very susceptible to sliding by cutting of toe area, removal of terrace or bench, and overloading; slide commonly activated without apparent cause.



### AREAS SUSCEPTIBLE TO DEBRIS FLOWS AND DEBRIS

#### AVALANCHES

Primarily shallow, narrow ravines and chutes with accumulation of stony colluvium generally 10 ft. (3 m) or less in thickness, susceptible to rapid movement during intense rainfall. Most ravines and chutes designated show evidence of former debris flows and avalanches. Symbol 'a' designates historical debris flow or debris avalanche.



### AREAS SUSCEPTIBLE TO ROCKFALL

Steep, locally vertical, natural and man-made slopes and cliffs, 15 ft. (4.5 m) or more high, formed dominantly of sandstone, limestone, sandy shale, mudstone and claystone. Interbedded mudstone, claystone and shale weather rapidly leaving sandstone and limestone rock faces unsupported.



### SOIL AND ROCK SUSCEPTIBLE TO LANDSLIDING

Soil and rock similar to that involved in landslides elsewhere in map area; primarily areas underlain by claystone, mudstone and shale associated with other rock types. Rock weathers rapidly on exposure forming clayey soil highly susceptible to sliding. Includes coves (U-shaped, shallow valleys) containing thick layers of clayey soil that are very susceptible to sliding where excavation breaks continuity of slope and where overloaded by artificial fill.

### AREAS LEAST PRONE TO LANDSLIDES

Map areas in which no patterns or symbols are shown; primarily valley floors, ridge tops and broad benches; modification by excavation and fill may lead to local landslides.

## NOTE

Information shown is intended as a general guide to ground conditions as of the date of field check. Additional landslides and rockfalls should be anticipated in all map units. The map unit depicts the dominant condition in the area delineated and variations in slope stability may occur at any point in the unit. This map is suitable for general planning purposes and as a supplement to more detailed studies for site selection. The map cannot be used as a substitute for detailed geologic and engineering investigations to establish design and construction criteria of specific sites. Some symbols may not appear on this map because the description is applicable to a series of maps.

### MAN-MADE FEATURES

Strip minus (combination of letter symbols indicates complex formed or more than one type of strip mine)

sh	bench with high wall
sf	furrowed with high wall
sd	multiple furrows and multiple benches
ss	hilltop removed
srg	reclaimed by grading
srn	reclaimed by secondary use
shr	regraded in part, high wall remains

Coal refuse banks  
r identified on aerial photographs, not classified in field check

rb not burnt nor on fire

rbb burnt

rbd burning

rbs sludge

### Quarries

q quarry site

### Gravel pits

g site of gravel pit

### Slides in man-made features

af	earth flow in fill
as	earth flow in strip castings
ar	earth flow in coal refuse

The first four digits of the open file number designate the specific 1:250,000 scale map sheet of which this quadrangle is a part. The last two digits designate the position of the quadrangle in a subdivision of the 1:250,000 scale map based on rows and tiers shown in the diagram to the right. The location of this quadrangle is shown by the black square.

